IN THE CLAIMS:

Please **AMEND** claim 38 as follows.

1-20. (Cancelled)

21. (Previously Presented) An apparatus, comprising:

a signal filter configured to filter a signal from a signal receiver;

a signal estimator configured to estimate channel operations of the signal from the signal filter;

a signal optimizer configured to generate optimized values for the signal from the signal filter;

a prefilter configured to filter the signal from the signal filter using the generated optimized values for the signal; and

a decision feedback sequence estimator configured to receive the generated optimized values, wherein the decision feedback sequence estimator comprises a summing element, a feedback filter, and a maximum likelihood sequence estimator,

wherein the summing element, the feedback filter, and the maximum likelihood sequence estimator are operatively connected to one another and further operatively connected to the prefilter, and

wherein an interconnection of the prefilter, the feedback filter, the maximum likelihood sequence estimator, and the summing element is configured to permit concurrent interference and prefilter operations to be performed.

22. (Cancelled)

23. (Previously Presented) The apparatus of claim 21, wherein the maximum likelihood sequence estimator is configured to transmit generated maximum-likelihood values through an output to the feedback filter, and wherein an input of the maximum likelihood sequence estimator is configured to receive summed values from the summing element.

24. (Previously Presented) The apparatus of claim 23, wherein the feedback filter comprises a first input configured to receive the optimized values from the signal optimizer and a second input configured to receive the generated maximum-likelihood values from the maximum likelihood sequence estimator.

25. (Previously Presented) The apparatus of claim 24, wherein the summing element is further configured to receive inputs from the prefilter and the feedback filter and is further configured to send a summed output to the maximum likelihood sequence estimator.

26. (Previously Presented) The apparatus of claim 21, wherein the signal filter comprises a feed forward filter.

27. (Previously Presented) The apparatus of claim 25, further comprising:

a de-interleaver configured to de-interleave the signal from an output of the maximum likelihood sequence estimator;

a de-punctuator configured to de-puncture the signal from the de-interleaver; and

a channel decoder configured to decode the signal from the de-interleaver.

28. (Previously Presented) The apparatus of claim 25, wherein the feedback filter is further configured to receive optimized signals from the signal optimizer that are used to define filter characteristics of the feedback filter.

29. (Cancelled)

30. (Previously Presented) The apparatus of claim 21, wherein the signal filter and the signal estimator comprise a receive chain.

31. (Previously Presented) The apparatus of claim 30, wherein the apparatus comprises a plurality of receive chains corresponding to a plurality of signal receivers

configured to receive and transmit a plurality of signal data vectors to the plurality of receive chains.

32. (Previously Presented) A method, comprising:

receiving a data vector;

forming optimized feed forward filter parameters from the data vector;

forming optimized feedback filter parameters from the data vector;

transmitting the optimized feed forward filter parameters and the optimized feedback filter parameters to a decision feedback sequence estimator, wherein the decision feedback sequence estimator comprises a feedback filter;

applying the optimized feed forward filter parameters to a feed forward filter to define filter characteristics of the feed forward filter;

applying the optimized feedback filter parameters to the feedback filter to define filter characteristics of the feedback filter; and

simultaneously performing interference cancellation and pre-filtering operations on the data vector through operation of the feed forward and feedback filters,

wherein receiving the data vector comprises receiving a plurality of data vectors on a corresponding plurality of receiving chains.

33. (Previously Presented) The method of claim 32, wherein simultaneously performing interference cancellation and pre-filtering operations comprises:

filtering the data vector with the feed forward filter and transmitting a feed forward filter output to a summing element;

receiving an output of the summing element in a maximum likelihood sequence estimator and generating an output that is transmitted to an input of the feedback filter and to a subsequent component; and

filtering the output received from the maximum likelihood sequence estimator in the feedback filter and transmitting a filtered signal to the summing element.

34-35. (Cancelled)

36. (Previously Presented) The method of claim 32, wherein the receiving is conducted by a receiving filter in communication with a signal receiver; and wherein the forming is conducted by a channel estimator in communication with the receiving filter, the channel estimator being in communication with an optimizer configured to generate the optimized feed forward filter parameters and the optimized feedback filter parameters.

37. (Previously Presented) The method of claim 33, wherein the subsequent component comprises a de-interleaver, a de-punctuator, and a channel decoder.

38. (Currently Amended) An apparatus, comprising:

signal filtering means for filtering a signal from a signal receiver;

signal estimating means for estimating channel operations of the signal from the signal filtering means;

signal optimizing means for generating optimized values for the signal from the signal filtering means;

prefiltering means for filtering the signal from the signal filtering means using the generated optimized values for the signal; and

interference cancelling means for receiving the generated optimized values to perform concurrent interference and prefilter operations,

wherein the interference cancelling means comprises

summing means for summing inputs from the prefilter means;

~~feedback filtering means for filtering optimized values and a summed output from the signal optimizing means and the summing means, respectively; and~~

maximum likelihood sequence estimating means for generating maximum-likelihood values from the summing means, and

feedback filtering means for filtering an output of the maximum likelihood sequence estimating means based on the generated optimized values to generate feedback-filtered values,

wherein an interconnection of the prefiltering means, the feedback filtering means, the maximum likelihood sequence estimating means, and the summing

means is configured to permit the concurrent interference and prefilter operations to be performed.

39. (Cancelled)

40. (Previously Presented) The apparatus of claim 38, wherein the maximum likelihood sequence estimating means is further for transmitting the generated maximum-likelihood values through an output to the feedback filtering means, and wherein an input of the maximum likelihood sequence estimating means is further for receiving summed values from the summing means.

41. (Previously Presented) The apparatus of claim 40, wherein the feedback filtering means comprises a first input configured to receive the optimized values from the signal optimizing means and a second input configured to receive the generated maximum-likelihood values from the maximum likelihood sequence estimating means.

42. (Previously Presented) The apparatus of claim 41, wherein the summing means is further for receiving inputs from the prefiltering means and the feedback filtering means and is further for sending a summed output to the maximum likelihood sequence estimating means, an output of the maximum likelihood sequence estimating means being an output from the apparatus.

43-45. (Cancelled)

46. (Previously Presented) The apparatus of claim 21, wherein the apparatus is a mobile communications device.

47. (Previously Presented) The apparatus of claim 21, wherein the apparatus is an integrated circuit.